

**What is claimed is:**

1           1.    A system of mining association itemsets,  
2 comprising:  
3           a database capable of storing at lease one weighted  
4           record and at least one transaction record,  
5           each weighted record comprising a time scale  
6           and a weighted value, the transaction records  
7           partitioned according to the time scale, and  
8           each transaction record comprising a plurality  
9           of items;  
10          a storage device storing a minimum support value;  
11          and  
12          an association analysis unit, configured to input  
13          the minimum support value, the transaction  
14          record and the weighted record, calculate at  
15          least one weighted minimum support value using  
16          a weighted minimum support equation whose  
17          parameters comprise the time scale, the  
18          weighted value and the minimum support value,  
19          and generate at least one itemset among the  
20          items, calculate a weighted frequency for each  
21          itemset using a weighted frequency equation  
22          whose parameters comprise the weighted value,  
23          determine whether the weighted frequency for  
24          each itemset exceeds the weighted minimum  
25          support value.

1           2.    The system as claimed in claim 1 wherein an  
2    itemset record within the database comprises at least one  
3    itemset.

1           3.    The system as claimed in claim 2 wherein the  
2    association analysis unit further adds the itemset with  
3    weighted frequency exceeding the weighted minimum support  
4    value.

1           4.    The system as claimed in claim 1 wherein the  
2    weighted minimum support values for subsequent partitions  
3    are calculated by adding previously calculated weighted  
4    minimum support values to the result of the weighted  
5    minimum support equation for the requisite partition,  
6    such that calculations for each successive partition are  
7    incremental.

1           5.    The system as claimed in claim 4 wherein the  
2    weighted minimum support equation is the minimum support  
3    value multiplied by the weighted value corresponding to  
4    the current partition plus the result of the weighted  
5    minimum support equation for the requisite partition.

1           6.    The system as claimed in claim 4 wherein the  
2    weighted frequency of the itemset for subsequent  
3    partitions is calculated by adding previously calculated  
4    weighted frequencies to the result of the weighted  
5    frequency equation for the requisite partition, such that  
6    calculations for each successive partition are  
7    incremental.

1           7. The system as claimed in claim 6 wherein the  
2 weighted frequency equation comprises occurrence of the  
3 itemset in the current partition multiplied by the  
4 weighted value corresponding to the current partition  
5 plus the result of the weighted frequency equation for  
6 the requisite partition.

1           8. A method of mining association itemsets, the  
2 method comprising using a computer to perform the steps  
3 of:

4           inputting a time scale, a weighted value, at least  
5           one transaction record corresponding to the  
6           time scale, and a minimum support value,  
7           wherein the transaction records are partitioned  
8           according to the time scale and the transaction  
9           record comprises at least one item;

10          generating at least one itemset among the  
11          transaction records;

12          calculating at least one weighted minimum support  
13          value using a weighted minimum support equation  
14          whose parameters comprise the time scale, the  
15          weighted value and the minimum support value;

16          calculating a weighted frequency of each itemset  
17          using a weighted frequency equation whose  
18          parameters comprise the weighted value;

19          determining whether the weighted frequency of each  
20          itemset exceeds the weighted minimum support  
21          value.

22           9.    The method as claimed in Claim 8 further  
23 comprising a step of storing the itemset with weighted  
24 frequency exceeding the weighted minimum support value to  
25 an itemset record.

1           10. The method as claimed in Claim 9 further  
2 comprising inputting the itemset generated for the prior  
3 partition from the itemset record.

1           11. The method as claimed in claim 8 wherein the  
2 weighted minimum support values for subsequent partitions  
3 are calculated by adding previously calculated weighted  
4 minimum support values to the result of the weighted  
5 minimum support equation for the requisite partition,  
6 such that calculations for each successive partition are  
7 incremental.

1           12. The method as claimed in claim 11 wherein the  
2 weighted minimum support equation is the minimum support  
3 value multiplied by the weighted value corresponding to  
4 the current partition plus the result of the weighted  
5 minimum support equation for the requisite partition.

1           13. The method as claimed in claim 11 wherein the  
2 weighted frequency of the itemset for subsequent  
3 partitions is calculated by adding previously calculated  
4 weighted frequencies to the result of the weighted  
5 frequency equation for the requisite partition, such that  
6 calculations for each successive partition are  
7 incremental.

1           14. The method as claimed in claim 13 wherein the  
2 weighted frequency equation comprises occurrence of the  
3 itemset in the current partition multiplied by the  
4 weighted value corresponding to the current partition  
5 plus the result of the weighted frequency equation for  
6 the requisite partition.

1           15. A storage medium for storing a computer program  
2 providing a method of mining association itemsets, the  
3 method comprising using a computer to perform the steps  
4 of:

5           inputting a time scale, a weighted value, at least  
6           one transaction record corresponding to the  
7           time scale and a minimum support value, wherein  
8           the transaction records are partitioned  
9           according to the time scale and the transaction  
10          record comprises at least one item;

11          generating at least one itemset among the  
12          transaction records;

13          calculating at least one weighted minimum support  
14          value using a weighted minimum support equation  
15          whose parameters comprise the time scale, the  
16          weighted value and the minimum support value;

17          calculating a weighted frequency of each itemset  
18          using a weighted frequency equation whose  
19          parameters comprise the weighted value;

20          determining whether the weighted frequency of each  
21          itemset exceeds the weighted minimum support  
22          value.

23           16. The method as claimed in Claim 15 further  
24 comprising a step of storing the itemset with weighted  
25 frequency exceeding the weighted minimum support value to  
26 an itemset record.

1           17. The method as claimed in Claim 16 further  
2 comprising inputting the itemset generated for the prior  
3 partition from the itemset record.

1           18. The method as claimed in claim 15 wherein the  
2 weighted minimum support values for subsequent partitions  
3 are calculated by adding previously calculated weighted  
4 minimum support values to the result of the weighted  
5 minimum support equation for the requisite partition,  
6 such that calculations for each successive partition are  
7 incremental.

1           19. The method as claimed in claim 18 wherein the  
2 weighted minimum support equation is the minimum support  
3 value multiplied by the weighted value corresponding to  
4 the current partition plus the result of the weighted  
5 minimum support equation for the requisite partition.

1           20. The method as claimed in claim 18 wherein the  
2 weighted frequency of the itemset for subsequent  
3 partitions is calculated by adding previously calculated  
4 weighted frequencies to the result of the weighted  
5 frequency equation for the requisite partition, such that  
6 calculations for each successive partition are  
7 incremental.

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1           21. The method as claimed in claim 20 wherein the  
2 weighted frequency equation comprises occurrence of the  
3 itemset in the current partition multiplied by the  
4 weighted value corresponding to the current partition  
5 plus the result of the weighted frequency equation for  
6 the requisite partition.